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(54) **Pouch with ridges.**

(57) The present invention relates to flexible pouches (1) and methods for making them. More specifically, said pouches (1) incorporate ridges (6,7) so as to provide at the same time a pop up opening and flow guiding features to ease the pouring of the product contained in said pouches (1).

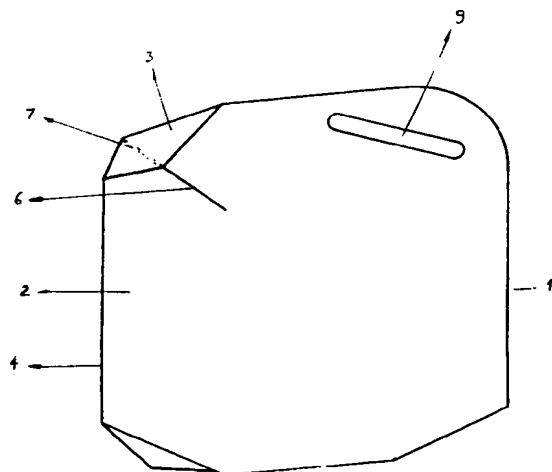


FIGURE 3

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Technical field

The present invention relates to flexible packaging pouches and a method for making same. More particularly, the present invention relates to flexible pouches which are provided with a pop up opening and flow guiding features to ease the pouring of their content.

Background of the invention

Many forms of containers, especially stand-up plastic containers used as packages for receiving dry, powdered, granular or even liquid commodities have been extensively described in the art as well as the methods of making them.

Representative of the prior art are the plastic pouches disclosed in US-3 380 646 or EP-A-0 334 242 which disclose containers of plastic material, of the type produced by welding and severing sheets or tubes of plastic material at spaced locations, and methods for making same. However, the use of such pouches for packaging dry or liquid commodities is affected by the disadvantage that said pouches offer no particular features for easing the dispensing of the contained commodities by the consumer after said pouches are cut open. More specifically, after having opened such a pouch by cutting one of its top corners, the front and the back sidewall panels of said pouch tend to collapse. Indeed, when inclining said pouch to pour its content, in most cases its content will not be poured in an acceptable manner from a consumer viewpoint. The content of said pouch will be first retained by said collapsed front and back sidewall panels and then suddenly dispensed, creating thereby important splashes which constitute a disadvantage of the use of said pouch. In order to avoid this, the front and the back sidewall panels collapse once a top corner is cut open; the consumer has to insert his fingers into the pouch to separate said front and back sidewall panels of said pouch.

An object of the present invention is to alleviate the above problem, by ensuring a smooth dispensing of the contained commodity, after the pouch has been cut open.

Flexible packaging pouches having means to self-expand said pouches after opening have been described for instance in US-5 184 896. The flexible pouches disclosed in said '896 patent allow said pouches to remain open. However, said '896 patent does not disclose specific features to ease the pouring of a pouch's content.

It is thus another object of the present invention to provide flow guiding features on the flexible pouch opening region so as to facilitate pouring of the product from said pouch.

It has now been found that these objects can be efficiently met by incorporating at least one ridge on each sidewall panel of the opening region of a flexible pouch so as to create a pouring spout shape that pops open when the pouch is opened. Indeed, said ridges create a self-expansion tendency in the flexible pouch's opening region once opened.

The ridges of the present invention provide at the same time an opening which pops open and flow guiding features on a flexible pouch in a simple manner, by manipulations on the pouch film only. It is therefore an advantage of the present invention to provide a flexible pouch that accomplishes the aforementioned objectives at minimal cost.

Summary of the invention

Referring to Figure 1 the present invention is a flexible pouch (1) having front (2) and back (3) sidewall panels superimposed upon one another and sealed together along their peripheral edges (4) to form a closed pouch structure, said pouch having also an opening region (5) and each of said front or back sidewall panels comprise at least one ridge wherein the ridge (6) of the front sidewall panel corresponds to the ridge (7) of the back sidewall panel and wherein said ridges emerge into said opening region so as to pop open when said opening region is opened.

In a preferred embodiment of the present invention the flexible pouch comprises a corner as the opening region and said ridges run towards the apex of said corner so as to create a pour spout shape that pops open when said corner is opened.

Detailed description of the invention

In order to make the invention more readily understood, reference will now be made to the accompanying drawings, in which

- Figure 1 is a front view of a flexible pouch according to the present invention before the opening region is cut.
- Figure 2 is a perspective view of the same pouch after the opening region is cut.
- Figure 3 is a perspective view of a flexible stand-up pouch according to the present invention after the opening region is cut.

Figures 1 and 2 illustrate a flexible pouch of the present invention generally indicated as (1). The pouch (1) includes a front (2) and a back (3) flexible sidewall panel which are superimposed over one another and sealed together along their peripheral edges (4) to complete a closed pouch structure. Said pouch made by two superimposed sidewall panels also has an opening region (5).

Said flexible pouch further comprises at least one ridge (6) located on said front sidewall panel (2) and at least one ridge (7) located on said back sidewall panel (3). The ridges of each sidewall panel correspond to the ridges of the other sidewall panel. Furthermore, it is essential that said ridges (6) and (7) emerge into the opening region (5). In other words, it is essential that said ridges cross an intended cutting line (8) of the opening region so as said ridges pop open by cutting open said line creating thereby a predetermined expanded configuration which facilitates the dispensing of the product contained in such a pouch.

The length, the number and the relative position (angle) of the ridges may be selected so as to predetermine the configuration desired when the pouch pops open after the opening region is opened. A variety of combinations are suitable as long as the pouch pops open when it is opened. It is therefore an advantage of the present invention that the number and the relative position of the ridges are available to adjust the specific expanded configuration desired.

Figure 3 illustrates a flexible stand-up pouch wherein the bottom can be formed with additional panels. Many stand-up pouches have been described in the art as for instance in EP-0 334 242 or US 5 184 896. Preferred herein are the stand-up pouches formed from two sidewall panels and a bottomwall panel formed from a gusset, i.e. doypacks.

In a preferred embodiment the flexible pouch according to the present invention comprises a corner as the opening region and said ridges run towards the apex of said corner so as to create a pour spout shape that pops open when said corner is opened.

Particularly preferred herein is a stand-up pouch having a corner as the opening region (5) located on the top peripheral edge and said ridges run towards the apex of said corner and terminate on the edge of said pouch or shortly before so as to create a predetermined lozenge configuration that pops open when said corner is opened.

In a further preferred embodiment of the present invention said opening region or corner is provided with either a printed cutting line (8) or a line of weakness (8) or both. A printed cutting line can be provided either on the front or the back sidewall panels so as to indicate to the consumer where to cut or tear. A line of weakness can also be provided to facilitate easy opening without the need of an opening utensil. Said line of weakness may be formed by, for example, either a line of lower thickness or perforating or scoring sidewall panels with a laser or a knife either individually before sidewall panels are sealed together, or collectively after they have been sealed together. One

or both ends of said line of weakness may further be terminated with a notch or a slit which aid in starting a tear along said line when the pouch is opened by the consumer.

In a preferred embodiment according to the present invention the flexible pouch has a handle (9) to ease its manipulation. Said handle is preferably located on the side opposite to said opening region or corner and most preferably on the top corner on the side opposite to the opening corner.

The present invention may be equally applied in containing different type of products such as, but not limited to, dry or powdered or liquid beverages, or other food products, automatic dishwasher detergents, laundry detergents, softeners and hard surface cleaners. The flexible pouches according to the present invention are also particularly suited to be used with a product intended to refill a reusable container thereby allowing said pouches to collapse when discarded. This satisfies environmental protection considerations as such a pouch can be rolled up after use, thereby reducing the volume of generated waste material.

There are a great variety of suitable flexible materials for the manufacture of the pouches according to the present invention. The sheet of material used herein is a composite sheet constituted by at least two layers of different materials such that one of said materials is thermally weldable while the other is not, or such that said materials are thermally weldable at different temperature ranges. Although not limited thereto, the preferred construction of the film is a multi-layer lamination of a plastic/paper material or a multi-layer lamination/coextrusion of any plastic material available to the man skilled in the art, i.e. polyethylene (HDPE or LDPE) or polyethylene terephthalate (PET) and polyamide (Nylon) having a thickness of 40 to 200 micrometers. Preferred multi-layered film has a first and second thermoplastic material which is heat sealed upon the application of heat at temperatures within different ranges. The preferred temperature for heat sealing the material on the interior surfaces of the peripheral edges of the wall panels is from 130°C to 150°C. The heat temperature of the polyethylene is from 125°C to 190°C. The preferred temperature for heat sealing the material on the exterior surfaces of the peripheral edges of the wall panels is from 210°C to 250°C. The heat temperature of the Nylon is from 190°C to 280°C. Other materials, thicknesses and heat sealing temperature ranges are possible. For example thermoplastic materials such as polycarbonate, polyester polyvinylidene chloride and other higher temperature sealing thermoplastics may be suited for the Nylon and polyolefins, polyvinylchloride and other lower temperature sealing thermoplastics may be substituted for the polyethylene.

The interior polyethylene type materials to be used herein have a thickness of from 5 to 170 micrometers whereas the exterior Nylon type materials to be used herein have a thickness of from 0.5 to 60 micrometers.

The present invention further encompasses processes for the manufacture of the flexible pouches described herein. The process may be a continuous, a semi-continuous or a multi-step batch process. The components used in the method are individually well-known in the art, see in particular the US patents to Doyen et al and Kan (US-3 380 646).

The process for making a flexible pouch according to the present invention comprises the steps of:

- a) supplying a web of a multi-layered film as described herein from a roll thereof. Alternatively, said film may be supplied directly, as fabricated, from an extrusion and/or laminated line.
- b) folding said film to form said front and back sidewall panels.
- c) heat sealing on said sidewall panels said ridges by pressing said film against a heated element (bar) having desired ridge shape and configuration (thickness, depth and length).
- d) applying conventional sealing bars to seal said sidewall panels together along their peripheral lateral edges.
- e) severing said pouches from each other by a knife or a cutter.

In a preferred embodiment the process for making a flexible stand-up pouch according to the present invention further comprises the following additional steps:

- 1) supplying from a second smaller roll another film to form a bottom gusset wall which is disposed and folded inwardly between said sidewall panels.
- 2) applying of heat, by the use of shoe or bar-like members, to the lower portion of said gusset wall and the lower portion of said sidewall panels so as to form the bottom of said stand-up pouch.

Said steps 1) and 2) may be carried out in the previously described process between the steps c) and d). However, it is not critical to the process of the present invention in which sequence said steps 2) and d) may be done, i. e. said step d) may be done either after said step 2) or just before said step 2).

Claims

1. A flexible pouch (1) having front (2) and back (3) sidewall panels superimposed upon one another and sealed together along their peripheral edges (4) to form a closed pouch struc-

ture, said pouch having also an opening region (5) characterized in that each of said front (2) or back (3) sidewall panels comprise at least one ridge wherein the ridge (6) of the front sidewall panel (2) corresponds to the ridge (7) of the back sidewall panel (3) and wherein said ridges emerge into the opening region (5) so as to pop open when said opening region is opened.

2. A flexible pouch according to claim 1 wherein the opening region (5) is a corner and wherein said ridges (6) and (7) located on each front (2) and back (3) sidewall panels run towards the apex of said corner so as to create a pour spout shape that pops open when said corner is opened.
3. A flexible pouch according to claims 1 or 2 wherein said pouch is a stand-up pouch, preferably formed from two sidewall panels and a bottomwall panel formed from a gusset.
4. A pouch according to any of the preceding claims wherein said opening region (5) comprises on either the front (2) or the back (3) sidewall panel or both a printed cutting line (8) to indicate where to cut open said pouch.
5. A pouch according to any of the preceding claims wherein said opening region (5) comprises as an opening means a line of weakness (8) on said front (2) and said back (3) sidewall panels.
6. A pouch according to claim 5 wherein said line of weakness (8) terminates with a notch or a slit which aids in starting a tear along said line of weakness when the pouch is opened.
7. A pouch according to any of the preceding claims wherein the material used is a multi-layered film with a first and second thermoplastic material, said first material which constitutes the exterior surface of said sidewall panels is made of polyamide having a thickness of from 0.5 to 60, whereas said second material which constitutes the interior surface of said sidewall panels is made of polyethylene having a thickness of from 5 to 170 micrometers.
8. A pouch according to any of the preceding claims wherein said pouch has a handle (9).
9. A method for making a flexible pouch according to claims 1-2 and claims 4-8, comprising the following steps of:

a) supplying a web of a multi-layered film as described herein from a roll thereof. Alternatively, said film may be supplied directly, as fabricated, from an extrusion and/or laminated line.

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b) folding said film to form said front and back sidewall panels.

c) heat sealing on said sidewall panels said ridges by pressing said film against a conventional sealing bar having desired ridge shape and configuration

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d) applying conventional sealing bars to seal said sidewall panels together along their peripheral lateral edges.

e) severing said pouches from each other by a knife or a cutter.

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10. A method according to claim 9 for the manufacture of a pouch according to claim 3, which comprises the additional steps of:

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- supplying from a second smaller roll another film to form a bottom gusset wall which is disposed and folded inwardly between said sidewall panels.

- applying of heat, by the use of shoe or bar-like members, to the lower portion of said gusset wall and the lower portion of said sidewall panels so as to form the stand-up bottom of said pouch.

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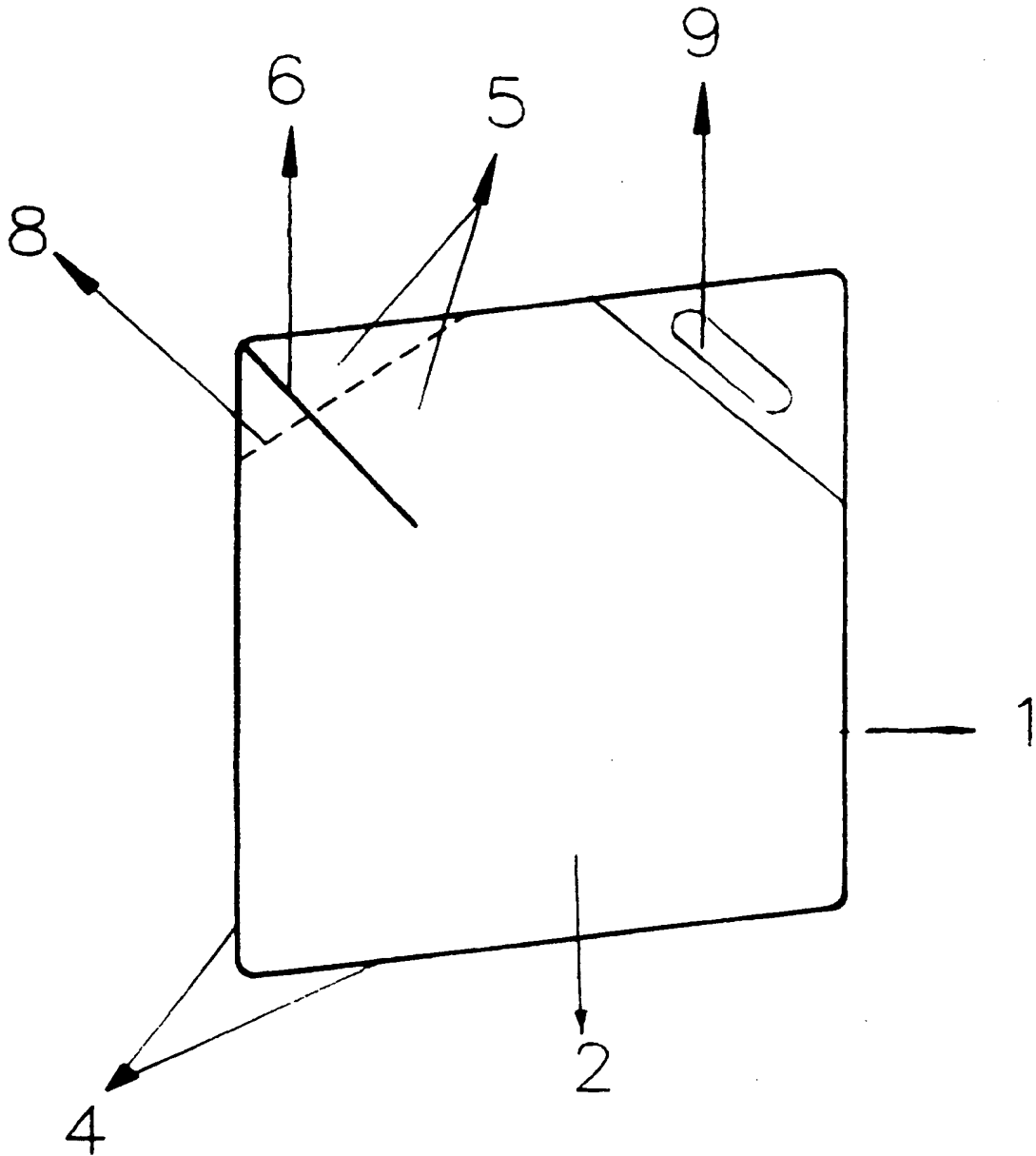


FIGURE 1

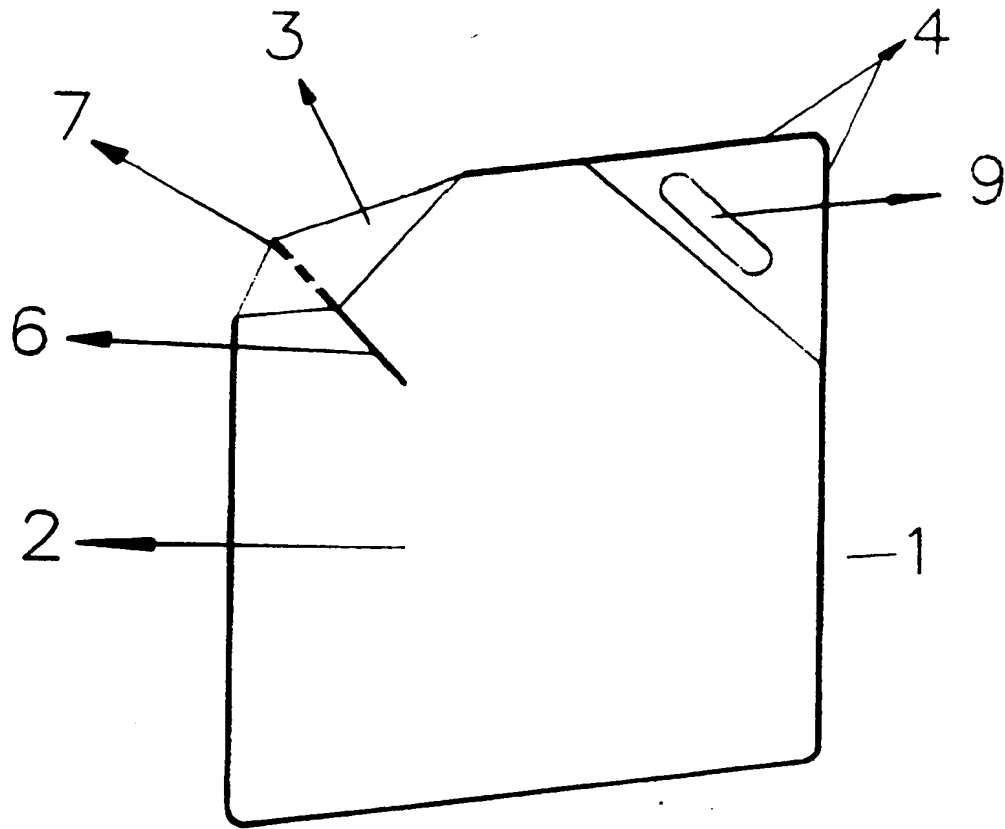


FIGURE 2

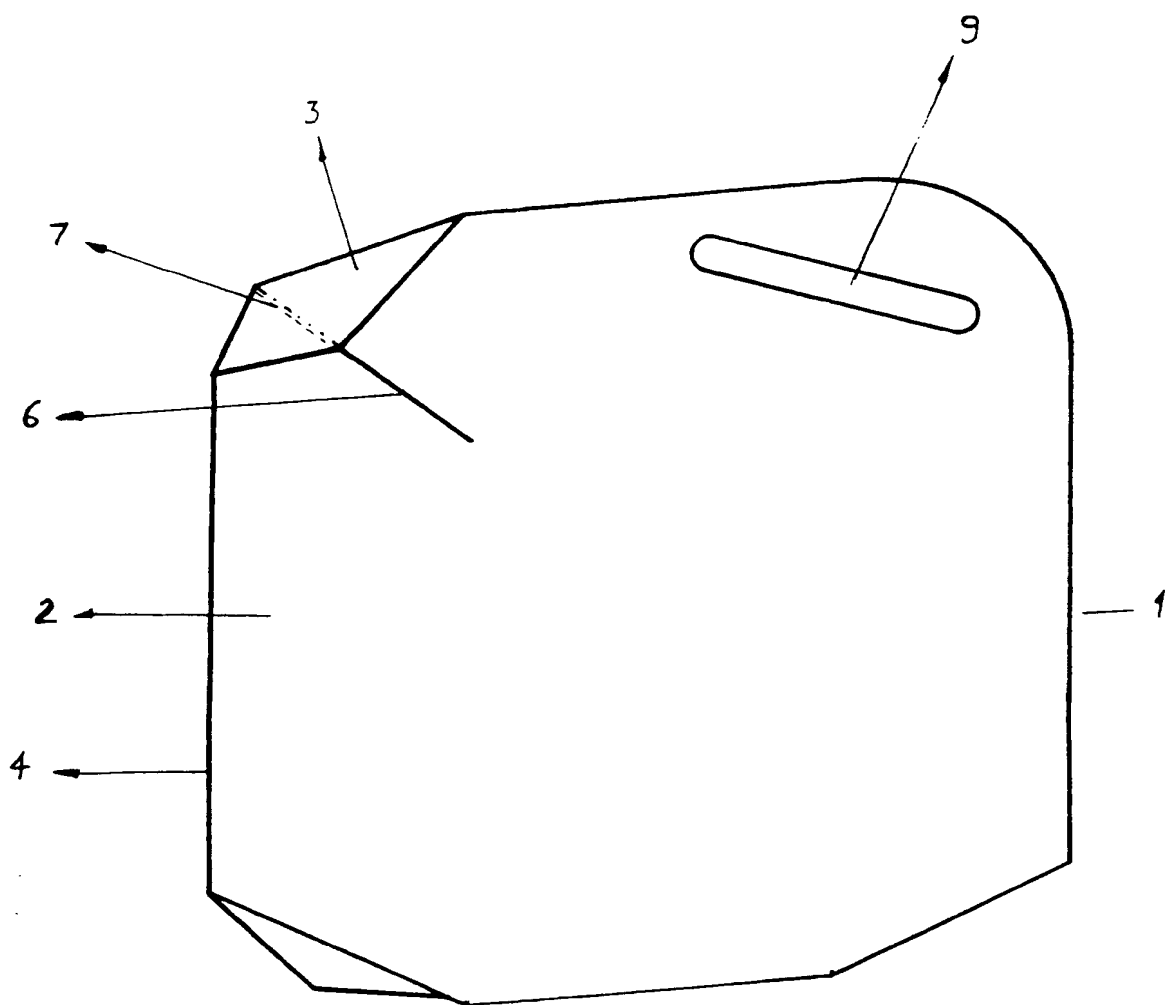


FIGURE 3



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EUROPEAN SEARCH REPORT

Application Number
EP 93 87 0119

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	EP-A-0 364 373 (THIMONNIER)	1-7,9,10	B65D33/00
Y	* column 4, line 17 - column 6, line 40; figures 1-8 *	8	B65D75/00
	---		B65D75/58
X	EP-A-0 383 020 (INDAG)	1-3,7,9,10	
	* column 3, line 42 - column 4, line 3 *		
	* column 5, line 35 - column 6, line 28; figures 1-6 *		

X	US-A-4 261 253 (SMITH)	1	
	* column 4, line 40 - column 5, line 29; figures 8-10 *		

Y	EP-A-0 345 647 (INDAG)	8	
	* figure 1 *		

A	GB-A-823 855 (BERGHGRACHT)	1	
	* page 2, line 103 - line 117; figures 2,4,5 *		

A	US-A-4 332 344 (STRODTHOFF)	1	
	* column 1, line 63 - line 68; figure 1 *		

The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 November 1993	Examiner Berrington, N
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons Δ : member of the same patent family, corresponding document	

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